AMENDMENTS TO THE SPECIFICATION

Page 1

The paragraph at lines 1-4 has been amended as follows:

The entire disclosure of Japanese Patent Application No. 2001-66129 filed on March 9, 2001 including specification, claims, ~~drawings and~~ drawings, and summary is incorporated herein by reference in its entirety.

Page 4

The paragraph at lines 11-17 has been amended as follows:

A heating device according to the present invention ~~comprises a~~ comprises, a support base adapted to support an article to be heated and including ~~comprising~~ aluminum or an aluminum alloy, heating means provided within the support base, and a skeletal member provided within the support base and including ~~comprising~~ a metallic material having a melting point of 850°C or higher.

The paragraph at lines 18-20 has been amended as follows:

The skeletal members may be disposed ~~so as~~ to be vertically symmetrical with respect to the heating means.

Page 5

The paragraph at lines 5-13 has been amended as follows:

A method for producing a heating device, according to the present invention, ~~comprises disposing~~ comprises, disposing heating means within a mold having a lower portion including ~~comprising~~ a metal mold and a side portion comprising a sand mold; pouring a melt of aluminum or an aluminum alloy into the mold; and covering a surface of the melt with an exothermic heat insulating material, whereby directional solidification of the melt takes place from a lower side toward an upper side to cast the melt.

The paragraph at lines 14-24 has been amended as follows:

Alternatively, a method for producing a heating device, according to the present invention, is a method for producing the above-mentioned heating device, comprising: disposing ~~comprising disposing~~ the heating means and the skeletal member within a mold having a lower portion including ~~comprising~~ a metal mold and a side portion including ~~comprising~~ a sand mold; pouring a melt of aluminum or an aluminum alloy into the mold; and covering a surface of the melt with an exothermic heat insulating material, whereby directional solidification of the melt takes place from a lower side toward an upper side to cast the melt.

Pages 5-6

The paragraph beginning on page 5, line 25 and ending on page 6, line 2 has been amended as follows:

A film forming apparatus, according to the present invention, comprises, the ~~comprises the~~ above-mentioned heating device for holding and heating an article to be ~~heated; and~~ heated, and film material throwing means for throwing a material for a film onto the article to be heated.

Page 6

The paragraph at lines 15-17 has been amended as follows:

FIG. 3 is an explanation drawing of a method for producing the heating device shown in FIGS. 1, 2A, and ~~2A and~~ 2B;

Page 7

The heading at line 1 has been amended as follows:

DETAILED DESCRIPTION OF THE ~~PREFERRED EMBODIMENTS~~INVENTION

The paragraph at lines 2-7 has been amended as follows:

~~Preferred embodiments~~ Embodiments of a heating device according to the present invention, a method for producing the heating device, and a film forming apparatus using the heating device will now be described in detail with reference to the

accompanying drawings, but in no way limit the present invention.

Page 9

The paragraph at lines 16-23 has been amended as follows:

Then, a □-shaped sand mold 2 is disposed on the upper surface of the metal mold 1 ~~so as~~ to surround the sheathed heater 12 and the support plates 13. Also, a ceramic sealing material 3 is filled between the lower end of the hole 1a of the metal mold 1 and the end portions of the sheathed heater 12 to close the gap between them. Then, the metal mold 1 and the sand mold 2 are preheated to about 50 to 80°C.

Pages 12-13

The paragraph beginning on page 12, line 22 and ending on page 13, line 6 has been amended as follows:

(5) The pair of support plates 13 are provided within the support base 11 ~~so as~~ to surround the sheathed heater 12 while sandwiching the sheathed heater 12 in the vertical direction, namely, ~~so as~~ to be symmetric with respect to the sheathed heater 12 in the vertical direction. Thus, the speed of heating of the support base 11 by the sheathed heater 12 in the vertical direction is uniformized, and differences in thermal expansion of the support base 11 in the vertical direction can be eliminated. Hence, the warpage of the support

base 11 upon heating can be prevented, and the substrate 108 can be stably held more reliably.

Pages 13-14

The paragraph beginning on page 13, line 21 and ending on page 14, line 5 has been amended as follows:

The material for the support plate 13 may be a metallic material having a melting point of 850°C or higher, preferably 1,000°C or higher. If the melting point is lower than 850°C, the support plate 13 may be deformed due to the heat of the molten metal 5 during manufacturing of the heating device 10. Furthermore, upon heating of the support base 11 up to 400 to 500°C, it is difficult for the support plates 13 to hold the support base 11 with sufficient rigidity. The melting point of 1,000°C or higher, in particular, is much ~~very~~ preferred, because the support plate will be ~~is~~ completely free from the above problems.

Page 15

The paragraph at lines 9-22 has been amended as follows:

A heating device 20 according to the present embodiment, as shown in FIGS. 4A and 4B, comprises a support base 11, a sheathed heater 12 buried in the support base 11, and slab-shaped support plates 23, as a skeletal member, buried in the

support base 11 ~~so as~~ to surround and sandwich the sheathed heater 12 in a horizontal direction. The support plates 23 are disposed such that the upper half and lower half of each of the support plates are vertically symmetric about the sheathed heater 12. The support plate 23 has a plurality of holes 23a in a honeycomb pattern piercing therethrough in a thickness direction (vertical direction), and comprises a material having a melting point of 850°C or higher (preferably, 1,000°C or higher).

Pages 17-18

The paragraph beginning on page 17, line 20 and ending on page 18, line 6 has been amended as follows:

(5) The support plates 23 are provided within the support base 11 ~~so as~~ to surround the sheathed heater 12 while sandwiching the sheathed heater 12 in the horizontal direction. The support plates 23 are disposed such that the upper half and lower half of each of the support plates are vertically symmetric about the sheathed heater 12. Thus, as in the heating device 10 of the First Embodiment, the speed of heating of the support base 11 by the sheathed heater 12 in the vertical direction is uniformized, and differences in thermal expansion of the support base 11 in the vertical direction can be eliminated. Hence, the warpage of the support

base 11 upon heating can be prevented, and the substrate 108 can be stably held more reliably.

Pages 18-19

The paragraph beginning on page 18, line 17 and ending on page 19, line 8 has been amended as follows:

A heating device 30 according to the present embodiment, as shown in FIG. 5, comprises a support base 11, a sheathed heater 12 buried in the support base 11, and a pair of slab-shaped support plates 33, as a skeletal member, buried in the support base 11 ~~so as~~ to sandwich the sheathed heater 12 in a vertical direction, namely, ~~so as~~ to be vertically symmetric with respect to the sheathed heater 12. A plurality of holes 33a in a honeycomb pattern pierce through each of the support plates 33 in a thickness direction (vertical direction), and a groove 33b to be fitted with the sheathed heater 12 is formed in one surface of each of the support plates 33. The support plate 33 comprises a material having a melting point of 850°C or higher (preferably, 1,000°C or higher). The sheathed heater 12 is sandwiched between the one surface of one of the support plate 33 and the one surface of the other support plate 33 ~~so as~~ to be fitted into the grooves 33b of these surfaces.

Page 21

The paragraph at lines 14-26 has been amended as follows:

(5) The support plates 33 are provided within the support base 11 ~~so as~~ to surround the sheathed heater 12 from both of the vertical direction and the horizontal direction, namely, ~~so as~~ to be symmetric with respect to the sheathed heater 12 in the vertical direction. Thus, as in the heating devices 10 and 20 of the First and Second Embodiments, the speed of heating of the support base 11 by the sheathed heater 12 in the vertical direction is uniformized, and differences in thermal expansion of the support base 11 in the vertical direction can be eliminated. Hence, the warpage of the support base 11 upon heating can be prevented, and the substrate 108 can be stably held more reliably.

Pages 21-22

The paragraph beginning on page 21, line 27 and ending on page 22, line 7 has been amended as follows:

(6) Furthermore, the support plates 33 are provided within the support base 11 ~~so as~~ to surround the sheathed heater 12 from both of the vertical direction and the horizontal direction. Thus, rigidity can be further increased as compared with the heating devices 10 and 20 of the First and Second

Embodiments, and stable holding of the substrate 108 can be performed more reliably.

Page 22

The paragraph at lines 12-23 has been amended as follows:

In the First, ~~Second and~~ Second, and Third Embodiments, the slab-shaped support plates 13, 23, 33 having the holes 13a, 23a, 33a in a honeycomb pattern are used. However, the present invention is not restricted to such support plates 13, 23, 33, but can use support plates having holes, for example, each in a circular shape, each in a triangular shape, or in a lattice pattern. However, it is preferred to use the slab-shaped support plates 13, 23, 33 having the holes 13a, 23a, 33a in a honeycomb pattern as in the First, ~~Second and~~ Second, and Third Embodiments, because they can exhibit the greatest force in opposition to stress such as thermal expansion, if any.

The paragraph at lines 24-27 has been amended as follows:

In the First, ~~Second and~~ Second, and Third Embodiments, the molten metal 5 is naturally cooled via the metal mold 1. However, the metal mold 1 may be cooled with water to cool the molten metal 5 forcibly.

Page 23

The paragraph at lines 1-16 has been amended as follows:

In the First, ~~Second and~~ Second, and Third Embodiments, explanations have been offered for the plasma CVD film forming apparatus 100 for producing a semiconductor or a liquid crystal by holding and heating the substrate 108 by use of the heating device 10, 20 or 30, and throwing the plasma 107 of the gas 106 of the material for a film from the plasma generating device 102 onto the substrate 108, thereby forming the film 109 on the substrate 108. However, the present invention is not restricted to this plasma CVD film forming apparatus 100. Any film forming apparatus, which comprises a heating device for holding and heating an article to be heated, and film material throwing means for throwing a material for a film onto the article to be heated, can be applied to the present invention in the same manner as in the First, ~~Second and~~ Second, and Third Embodiments.

Pages 23-24

The paragraph beginning on page 23, line 19 and ending on page 24, line 3 has been amended as follows:

The heating device according to the present invention comprises a support base adapted to support an article to be heated and including ~~comprising~~ aluminum or an aluminum alloy,

heating means provided within the support base, and a skeletal member provided within the support base and including ~~comprising~~ a metallic material having a melting point of 850°C or higher. Thus, even when the support base is heated to 400 to 500°C by the heating means, the support base can be held, without being deformed, by the skeletal member. Moreover, the article to be heated, which has been placed on the support base, can be held stably.

Page 24

The paragraph at lines 4-13 has been amended as follows:

The skeletal members are disposed ~~so as~~ to be vertically symmetrical with respect to the heating means. Thus, the speed of heating of the support base by the heating means in the vertical direction is uniformized, and differences in thermal expansion of the support base in the vertical direction can be eliminated. Hence, the warpage of the support base upon heating can be prevented, and the article to be heated, which has been placed on the support base, can be stably held more reliably.

Pages 24-25

The paragraph beginning on page 24, line 25 and ending on page 25, line 7 has been amended as follows:

Also, the skeletal member comprises one of iron, steel, nickel, a nickel alloy, titanium, a titanium alloy, copper, and a copper alloy. Thus, the skeletal member can be produced at a low cost if it includes ~~comprises~~ iron or steel; the heat resistance of the skeletal member can be increased if it includes ~~comprises~~ nickel or nickel alloy; the thermal conductivity of the skeletal member can be increased if it includes ~~comprises~~ copper or copper alloy; and the weight of the skeletal member can be decreased if it includes ~~comprises~~ titanium or titanium alloy.

Page 25

The paragraph at lines 8-26 has been amended as follows:

The method for producing a heating device, according to the present invention, comprises disposing heating means within a mold having a lower portion including ~~comprising~~ a metal mold and a side portion including ~~comprising~~ a sand mold; pouring a melt of aluminum or an aluminum alloy into the mold; and covering a surface of the melt with an exothermic heat insulating material, whereby directional solidification of the melt takes place from a lower side toward an upper side

to cast the melt. This method gives the following advantages over the conventional method, which includes ~~comprises~~ cutting a support base to form a groove, laying heating means in the groove, then fitting a cover onto the groove, and welding the cover: Continuous production can be facilitated, and the manufacturing cost can be reduced markedly. Furthermore, the melt can be solidified without occurrence of defects, such as gas holes and shrinkage cavities. Consequently, the heating device of satisfactory quality can be produced.

Pages 25-26

The paragraph beginning on page 25, line 27 and ending on page 26, line 16 has been amended as follows:

An alternative method for producing a heating device, according to the present invention, is a method for producing the above-mentioned heating device, comprising disposing the heating means and the skeletal member within a mold having a lower portion including ~~comprising~~ a metal mold and a side portion including ~~comprising~~ a sand mold; pouring a melt of aluminum or an aluminum alloy into the mold; and covering a surface of the melt with an exothermic heat insulating material, whereby directional solidification of the melt takes place from a lower side toward an upper side to cast the melt. This method gives the following advantages over the

conventional method, which includes ~~comprises~~ cutting a support base to form a groove, laying heating means in the groove, then fitting a cover onto the groove, and welding the cover: Continuous production can be facilitated, and the manufacturing cost can be reduced markedly.